AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions, and listings, of claims in the application.

1. (Currently Amended) A heat exchanger including plate fins and ~~tube~~ tubes comprising:

a plurality of fins stacked at respective intervals~~,~~; and

a plurality of heat exchanger tubes penetrating each of said fins in a fin-stacking direction, said heat exchanger exchanging heat between a first fluid flowing inside said heat exchanger tubes and a second fluid flowing outside said heat exchanger tubes, ~~through said heat exchanger tubes and said fins~~, wherein

each of said fins includes a plurality of cut-raised portions, ~~at least one~~ located on both of upstream and downstream sides of said fins with respect to a direction of flow of the second fluid flowing outside said heat exchanger tubes,

the cut-raised portions on the upstream side and the cut-raised portions on the downstream side are symmetrically disposed with respect to a center line connecting respective centers of said heat exchanger tubes, the center line being aligned in a column direction that extends parallel to an edge of each of said fins,

each of said cut-raised ~~portion corresponding~~ portions corresponds to ~~each of said~~ a respective heat exchanger ~~tubes and being~~ tube,

said cut-raised portions are disposed ~~substantially~~ only within ~~a region~~ one of a plurality of regions of said fin, each of said regions being centered about a respective heat exchanger tube and satisfying

$$Ws = (1 - \varphi) Dp + \varphi D$$

$$1.0 \geq \varphi > 0.5,$$

Ws is ~~entire spread~~ the width of each of said ~~at least one cut-raised portion~~ regions corresponding to ~~each of said~~ respective heat exchanger tubes in ~~a~~ the

column direction ~~that extends along an end of said fin on an upstream side of the second fluid~~,

D is ~~an~~ the outer diameter of each of said heat exchanger tubes, ~~and~~

Dp is ~~alignment~~ the pitch of said heat exchanger tubes in the column direction,

no cut-raised portion is present in an area of said fin centered, in the column direction, between adjacent pairs of said heat exchanger tubes and having a width Wf, in the column direction, satisfying

$Wf = \varphi (Dp - D)$, and

$Wf + Ws = Dp$.

2. (Currently Amended) The heat exchanger according to claim 1, wherein said ~~at least one~~ cut-raised ~~portion~~ portions corresponding to each of said heat exchanger tubes ~~is~~ are disposed only in a region of said ~~fin~~ fins which falls within 130 degrees ~~in~~ of a central angle of the corresponding heat exchanger tube, toward ~~an~~ upstream ~~or~~ and downstream ~~direction~~ directions of the second fluid.

3. (Currently Amended) The heat exchanger according to claim 1, wherein each of said cut-raised ~~portion~~ portions has two opposite edges disconnected from a main body of said fin, at least one of ~~said~~ the corresponding edges extending obliquely relative to the column direction.

4. (Currently Amended) The heat exchanger according to claim 1, wherein each of said cut-raised ~~portion~~ portions has two opposite edges disconnected from a main body of ~~said~~ the corresponding fin, at least one of said edges extending in a radial direction of the corresponding heat exchanger tube.

5. (Currently Amended) The heat exchanger according to claim 1, wherein each of said cut-raised ~~portion~~ portions has two opposed side ends connected to a

main body of ~~said~~ the corresponding fin, at least one of said side ends extending in a direction perpendicular to the column direction.

6. (Currently Amended) The heat exchanger according to claim 1, including at least two cut-raised portions for each of said heat exchanger tubes, said cut-raised portions being disposed symmetrically with respect to an axis passing through the center of said corresponding heat exchanger tube and extending in a direction perpendicular ~~or parallel~~ to the column direction.

7. (Currently Amended) The heat exchanger according to claim 1, wherein each of said cut-raised ~~portion~~ portions has a shape raised alternately in a longitudinal direction of said heat exchanger tubes~~, based on a main body of said fin~~.

8. (Currently Amended) The heat exchanger according to claim 1, wherein each of said ~~fin~~ fins includes a convex ~~shaped~~ protrusion continuously extending in the column direction.

9. (Currently Amended) The heat exchanger according to claim 1, wherein each of said cut-raised ~~portion~~ portions is cut and raised from a main body of said fin to form a bridge shape which has a leg segment connected to said main body, and a beam segment spaced apart from said main body.